

Vydyne® R513 NT

polyamide 66



Vydyne R513 NT is general-purpose, 13% glass-fiber reinforced PA66 resin. Available in natural, it is an injection-molding grade resin that is lubricated for machine feed, flow and mold release. Vydyne R513 NT provides a higher heat distortion temperature, better resistance to creep, higher impact and better dimensional stability when compared with unreinforced PA66. This resin has good chemical resistance to a broad range of chemicals, including many aliphatic and aromatic hydrocarbons found in most solvents, gasoline, hydraulic fluids, greases and machine oils.

Vydyne R513 NT has tensile strength and modulus properties just below aluminum and zinc and can replace these metals in

numerous applications due to an excellent balance of properties. Reduction in production costs, energy consumption and part weight are key advantages of Vydyne glass-reinforced PA66 resins over aluminum and/or zinc die-cast parts.

Typical Applications/End Uses:

Vydyne R513 NT resin has been used for many under-the-hood automotive applications, motor housings for power tools and garden appliances. This resin has also been used in miscellaneous brackets, gears and clips, which require high rigidity and strength.

General	
Material Status	• Commercial: Active
Availability	• Asia Pacific • Europe • North America
Filler / Reinforcement	• Glass Fiber, 13% Filler by Weight
Additive	• Lubricant
Features	<ul style="list-style-type: none"> • Gasoline Resistance • Good Chemical Resistance • Good Flow • Good Mold Release • Grease Resistant • Heat Stabilized • High Rigidity • High Strength • Lubricated • Oil Resistant • Solvent Resistant
Uses	<ul style="list-style-type: none"> • Automotive Under the Hood • Gears • Housings • Power/Other Tools
Agency Ratings	• ASTM D 4066 PA0111G15 • ASTM D 6779 PA0111G15
Automotive Specifications	<ul style="list-style-type: none"> • CHRYSLER MS-DB-41 • CPN2239 Color: Black • DAEWOO EDS-M-5161-11 • FORD ESA-M4D349-A • Color: Natural • GM GMP.PA66.020 • SAE J1639 PA1112 Color: Natural
UL File Number	• E70062
Appearance	• Natural Color
Forms	• Pellets
Processing Method	• Injection Molding

Physical	Dry	Conditioned	Unit	Test Method
Density	1.23	--	g/cm ³	ISO 1183
Molding Shrinkage				ISO 294-4
Across Flow : 73°F, 0.0787 in	1.0	--	%	
Flow : 73°F, 0.0787 in	0.50	--	%	
Water Absorption (73°F, 24 hr)	1.0	--	%	ISO 62
Water Absorption (Equilibrium, 73°F, 50% RH)	2.2	--	%	ISO 62

Mechanical	Dry	Conditioned	Unit	Test Method
Tensile Modulus (73°F)	899000	566000	psi	ISO 527-2
Tensile Stress (Break, 73°F)	16700	10900	psi	ISO 527-2
Tensile Strain (Break, 73°F)	3.0	13	%	ISO 527-2
Flexural Modulus (73°F)	754000	457000	psi	ISO 178
Flexural Stress (73°F)	23900	15400	psi	ISO 178
Poisson's Ratio	0.40	--		ISO 527-2
Impact	Dry	Conditioned	Unit	Test Method
Charpy Notched Impact Strength				ISO 179
-22°F	2.9	2.5	ft·lb/in ²	
73°F	2.9	3.6	ft·lb/in ²	
Charpy Unnotched Impact Strength				ISO 179
-22°F	15	18	ft·lb/in ²	
73°F	18	20	ft·lb/in ²	
Notched Izod Impact Strength				ISO 180
-22°F	2.4	2.6	ft·lb/in ²	
73°F	2.4	4.0	ft·lb/in ²	
Thermal	Dry	Conditioned	Unit	Test Method
Heat Deflection Temperature				ISO 75-2/B
66 psi, Unannealed	496	--	°F	
Heat Deflection Temperature				ISO 75-2/A
264 psi, Unannealed	464	--	°F	
Melting Temperature	500	--	°F	ISO 11357-3
CLTE - Flow (73 to 131°F, 0.0787 in)	1.7E-5	--	in/in/°F	ISO 11359-2
CLTE - Transverse (73 to 131°F, 0.0787 in)	6.3E-5	--	in/in/°F	ISO 11359-2
RTI Elec				UL 746
0.0295 in	248	--	°F	
0.0591 in	248	--	°F	
0.118 in	248	--	°F	
RTI Imp				UL 746
0.0295 in	185	--	°F	
0.0591 in	185	--	°F	
0.118 in	221	--	°F	
RTI Str				UL 746
0.0295 in	239	--	°F	
0.0591 in	248	--	°F	
0.118 in	248	--	°F	

Electrical	Dry	Conditioned	Unit	Test Method
Volume Resistivity (0.0295 in)	1.0E+14	--	ohm·cm	IEC 60093
Dielectric Strength (0.0394 in)	610	--	V/mil	IEC 60243
Arc Resistance (0.118 in)	PLC 5	--		ASTM D495
Comparative Tracking Index (0.118 in)	600	--	V	IEC 60112
High Amp Arc Ignition (HAI)				UL 746
0.0295 in	PLC 0	--		
0.0591 in	PLC 0	--		
0.118 in	PLC 0	--		
High Voltage Arc Tracking Rate (HVTR)	PLC 1	--		UL 746
Hot-wire Ignition (HWI)				UL 746
0.0295 in	PLC 4	--		
0.0591 in	PLC 4	--		
0.118 in	PLC 4	--		
Flammability	Dry	Conditioned	Unit	Test Method
Flame Rating				UL 94
0.0295 in	HB	--		
0.0591 in	HB	--		
0.118 in	HB	--		
Oxygen Index	25	--	%	ISO 4589-2
Injection		Dry Unit		
Drying Temperature		176 °F		
Drying Time		4.0 hr		
Suggested Max Regrind		25 %		
Rear Temperature		536 to 590 °F		
Middle Temperature		536 to 590 °F		
Front Temperature		536 to 590 °F		
Nozzle Temperature		536 to 590 °F		
Processing (Melt) Temp		545 to 581 °F		
Mold Temperature		149 to 203 °F		

Notes

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